CLAIMS:

1.   A network device having a plurality of ports, said network device comprising:

address resolution logic (ARL) configured to perform address resolution of data packets received at ports of said plurality of ports and to switch data packets from a first network port of said plurality of ports to a second network port of said plurality of ports;

a first switch having a first group of ports which are a subset of said plurality of ports and are numbered by a first numbering scheme, a first rate control logic for performing rate control functions related to switching data packets between said network ports, and a first local communications channel for transmitting messages between said first group of ports and said rate control logic, said first switch being configured to generate rate control messages based on data packet traffic to said first group of ports;

a second switch having a second group of ports which are a subset of said plurality of ports and are numbered by a second numbering scheme different from said first numbering scheme, a second rate control logic for performing rate control functions related to switching data packets between said network ports, and a second local communications channel for transmitting messages between said second group of ports and second rate control logic, said second switch being configured to generate rate control messages based on data packet traffic to said second group of ports;

a CPU coupled to said first switch and said second switch and configured to control said first and second switch; and

wherein a first link port of said first group of ports is coupled to a second link port of said second group of ports, said ARL is configured to perform address resolution based on said first numbering scheme and said second numbering scheme, said first link port is configured to generate a first rate control message and relay said first rate control message to said second link port, and said second switch is configured to generate a second rate control message based on said first rate control message, said second rate

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control message being different than said first rate control message.

2.   The network device of claim 1, wherein

said first switch is configured to generate said first rate control message and deliver said first rate control message to said first local communications channel,

said first link port is configured to receive said first rate control message from said first local communications channel, to generate a MAC control frame including said first rate control message and to relay said MAC control frame to said second link port,

said second link port is configured to extract said first rate control message and relay said first rate control message to a second local communications channel, and

said second switch is configured to generate said second rate control message based on said first rate control message and relay said second rate control message to said second local communications channel.

3.   The network device of claim 2, wherein said first local communications channel comprises an S channel of said first switch, and said second local communications channel comprises an S channel of said second switch.

4.   The network device of claim 3, wherein at least one of said first and second switch is configured to generate rate control messages which comprise side band messages.

5.   The network device of claim 1, wherein said first switch is configured to generate a first rate control message comprising a PAUSE frame related to said first link port, said second switch is configured to generate a second rate control message comprising a COS status notification relating to said second link port, and said second group of ports are

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configured to perform a rate control function relating to a COS status notification relating to all of said first group of ports based on said second rate control message.

6.   The network device of claim 5, wherein said second switch is configured to relay said second rate control message to said second local communications channel, and each of said second group of ports are configured to receive said second rate control message and covert said second rate control message into a bit map in order to perform a rate control function relating to a COS status notification relating to all of said second group of ports based on said second rate control message.

7.   The network device of claim 6, wherein each of said second group of ports is configured to copy said bit map into an active port register in order to prevent said port from sending any data packets to said first switch.

8.   The system of claim 1, wherein said second link port is configured to communicate with a PMMU of said second switch in order to generate said second rate control message, and said PMMU is configured to generate said second rate control message.

9.   The system of claim 1, wherein said second link port is configured to generate said second rate control message.

10.   A method for communication of rate control messages between two switches, said method comprising the steps of:
        designating a first plurality of ports of a first switch by a first numbering scheme;
        designating a second plurality of ports of a second switch by a second numbering scheme;
        coupling a first link port of said first plurality of ports to a second link

port of said second plurality of ports;

configuring said first switch to generate a first rate control message at said first switch and relay said first rate control message to said first link port;

configuring said first link port to generate a first MAC control frame based on said first rate control message and relay said first MAC control frame to said second link port;

configuring said second link port to extract said first rate control message from said MAC control frame at said second link port; and

configuring said second switch to generate a second rate control message based on said first rate control message different from said first rate control message in order to prevent a back pressure related to said second link port.

11.   The method of claim 10, wherein said configuring said first link port step includes configuring said first link port step to generate a MAC control frame including data relating to said first link port being congested.

12.   The method of claim 11 further comprising the steps of:

configuring said second link port to extract said first rate control message from said MAC control frame and to send said first rate control message to a second communications channel within said second switch.

13.   The method of claim 10, wherein said configuring said first switch step includes configuring said first switch to generate a first rate control message including a side band message and to relay said side band message to said first link port via an S channel communications channel of said first switch.

14.   The method of claim 12, wherein said configuring said first switch step includes configuring said first switch to generate a first rate control message including a source bit identifying said first switch as a source

of said rate control message and a port bitmap identifying a congested port of said first plurality of ports based on said first numbering scheme.

15.   The method of claim 10, wherein

said configuring said first switch step includes configuring said first switch to generate a first rate control message including a PAUSE frame related to said first link port, and

configuring said second switch step includes configuring said second switch to generate a second rate control message including a COS queue status notification relating said second link port when said first rate control message includes a PAUSE frame.

16.   The method of claim 15, wherein

said configuring said second switch step includes configuring said second link port to communicate with a PMMU of said second switch in order to generate said second rate control message, and configuring said PMMU to generate said second rate control message.

17.   The method of claim 15, wherein

said configuring said second switch step includes configuring said second link port to generate said second rate control message.

18.   The method of claim 15, wherein

said configuring said second switch step includes configuring said second switch to relay said second rate control message to said second local communications channel, and configuring each of said second group of ports to receive said second rate control message and covert said second rate control message into a bit map in order to perform a rate control function relating to a COS status notification relating to all of said second group of ports based on said second rate control message.

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19.   The method of claim 18, wherein said configuring said second switch step includes configuring each of said second group of ports to copy said bit map into an active port register in order to prevent said port from sending any data packets to said first switch.

20.   A network device having a plurality of ports, said network device comprising:

address resolution logic (ARL) means for performing address resolution of data packets received at ports of said plurality of ports and for switching data packets from a first network port of said plurality of ports to a second network port of said plurality of ports;

a first switch means having a first group of ports which are a subset of said plurality of ports and are numbered by a first numbering scheme, a first rate control logic for performing rate control functions related to switching data packets between said network ports, and a first local communications means for transmitting messages between said first group of ports and said rate control logic, said first switch means configured to generate rate control messages based on data packet traffic to said first group of ports;

a second switch means having a second group of ports which are a subset of said plurality of ports and are numbered by a second numbering scheme different from said first numbering scheme, a second rate control logic for performing rate control functions related to switching data packets between said network ports, and a second local communications means for transmitting messages between said second group of ports and second rate control logic, said second switch means being configured to generate rate control messages based on data packet traffic to said second group of ports;

a processing means coupled to said first switch means and said second switch means and for controlling said first means and second switch means; and

wherein a first link port of said first group of ports is coupled to a second link port of said second group of ports, said ARL means is configured

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to perform address resolution based on said first numbering scheme and said second numbering scheme, said first link port is configured to generate a first rate control message and relay said first rate control message to said second link port, and said second switch is configured to generate a second rate control message based on said first rate control message, said second rate control message being different than said first rate control message.

21.   The network device of claim 20, wherein

said first switch means is configured to generate said first rate control message and deliver said first rate control message to said first local communications means,

said first link port is configured to receive said first rate control message from said first local communications means, to generate a MAC control frame including said first rate control message and to relay said MAC control frame to said second link port,

said second link port is configured to extract said first rate control message and relay said first rate control message to a second local communications means, and

said second switch means is configured to generate said second rate control message based on said first rate control message and relay said second rate control message to said second local communications means.

22.   The network device of claim 21, wherein said first local communications means comprises an S channel of said first switch means, and said second local communications means comprises an S channel of said second switch means.

23.   The network device of claim 22, wherein at least one of said first and second switch means is configured to generate rate control messages which comprise side band messages.

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24.   The network device of claim 20, wherein said first switch means is configured to generate a first rate control message comprising a PAUSE frame related to said first link port, said second switch means is configured to generate a second rate control message comprising a COS status notification relating to said second link port, and said second group of ports are configured to perform a rate control function relating to a COS status notification relating to all of said first group of ports based on said second rate control message.

25.   The network device of claim 24, wherein said second switch means is configured to relay said second rate control message to said second local communications means, and each of said second group of ports are configured to receive said second rate control message and convert said second rate control message into a bit map in order to perform a rate control function relating to a COS status notification relating to all of said first group of ports based on said second rate control message.

26.   The network device of claim 25, wherein each of said second group of ports is configured to copy said bit map into an active port register in order to prevent said port from sending any data packets to said first switch means.

27.   The system of claim 20, wherein said second link port is configured to communicate with a memory management means of said second switch means in order to generate said second rate control message, and said memory management means is for generating said second rate control message.

28.   The system of claim 20, wherein said second link port is configured to generate said second rate control message.

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